

QUANTITATION OF COTININE IN SERA OF SMOKERS

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PURPOSE: THIS STUDY MEASURES BLOOD COTININE LEVELS AFTER CIGARETTE SMOKING.

METHODS: THE BLOOD NICOTINE AND/OR COTININE LEVELS WERE QUANTITATED BY RADIOIMMUNOASSAY IN 7 MALE AND 16 FEMALE SMOKERS AFTER SMOKING CIGARETTES OF KNOWN NICOTINE CONTENT UNDER CONTROLLED CONDITIONS.

FINDINGS: COTININE WAS DETECTED IN CONCENTRATIONS RANGING UP TO 600 NG/ML. THERE WAS POOR CORRELATION BETWEEN COTININE LEVELS AND THE NICOTINE CONTAINED IN THE CIGARETTES SMOKED DAILY BY THE INDIVIDUALS. SAMPLES FROM 21 SUBJECTS WERE ANALYZED FOR NICOTINE, BUT ONLY ONE SHOWED A VALUE AS HIGH AS 70 NG/ML.

IN A FEMALE WHO HAD ABSTAINED FROM SMOKING FOR TWO WEEKS PRIOR TO THE EXPERIMENT, INITIALLY NEITHER COTININE NOR NICOTINE WAS FOUND IN THE SERA BUT FIVE MINUTES AFTER SMOKING TWO CIGARETTES (2.73 MG OF NIC/CIG), LEVELS OF 42 NG OF NICOTINE AND 40 NG OF COTININE WERE FOUND PER ML OF SERA. THE NEXT DAY, 31 NG OF COTININE/ML SERA WAS PRESENT, BUT NICOTINE WAS NOT DETECTED.

DISCUSSION: IN OTHER PREVIOUSLY UNPUBLISHED EXPERIMENTS COTININE LEVELS DETERMINED IN CORD ARTERIAL, CORD VENOUS, AND MATERNAL BLOOD COLLECTED AT DELIVERY FROM 35 SMOKING AND 65 NON-SMOKING MOTHERS, YIELDED UP TO 250 NG/ML IN THE SAMPLES FROM SMOKERS AND NONE IN SAMPLES FROM NONSMOKERS, "INDICATING THAT COTININE CAN PASS INTO THE CIRCULATION OF THE FETUS."

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IN OTHER UNPUBLISHED EXPERIMENTS, ANALYSIS OF SPINAL FLUID FROM 11 SMOKERS YIELDED UP TO 250 NG/ML COTININE WHILE SERUM FROM A "HEAVY PIPE SMOKER" SHOWED THE PRESENCE OF 220 NG COTININE/ML. "THUS, EVEN WHEN INHALATION IS SUPPOSEDLY MINIMAL, THE CONCENTRATION OF COTININE IS COMPARABLE TO THAT FOUND IN SERA OF SOME CIGARETTE SMOKERS."

"BECAUSE OF THE LACK OF RAPID AND SPECIFIC ASSAYS TO DETERMINE THE LEVELS OF NICOTINE AND ITS METABOLITES IN THE PHYSIOLOGICAL FLUIDS OF SMOKERS, SURVEYS TO ASSESS THEIR POSSIBLE ROLE AS RISK FACTORS HAVE RELIED SOLELY ON THE HISTORY OF THE INDIVIDUAL SMOKER....HOWEVER, NICOTINE INTAKE CAN VARY SINCE SMOKING HABITS ARE DIFFERENT...[AND] THE ABILITY TO DETOXIFY THE ALKALOID IN VIVO MAY DEPEND ON MANY FACTORS...."

"WHETHER ...[THE VARIABLE COTININE LEVEL IN INDIVIDUALS] REFLECTS DIFFERENCES IN SMOKING HABITS, GENETIC FACTORS, AND/OR REPRESENTS THE RESULTS OF ENZYME INDUCTION OR ADAPTATION IS UNKNOWN AT PRESENT. HOWEVER, SINCE NICOTINE HAS A SHORT PLASMA HALF-LIFE, IT MAY BE ADVANTAGEOUS TO ASSAY FOR THE LONGER LIVED AND MORE ABUNDANT METABOLITE IN STUDIES DESIGNED TO RELATE THE EFFECTS OF SMOKING TO HEALTH. THE RADIOIMMUNOASSAY METHOD FOR COTININE IS PRACTICAL FOR EPIDEMIOLOGICAL STUDIES AND OFFERS DISTINCT ADVANTAGES OVER AVAILABLE CHROMATOGRAPHIC TECHNIQUES."

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QUANTITATIVE STUDY, SEROLOGICAL STUDY, METHODOLOGY STUDY, HUNDRED,
BLOOD COTININE CONTENT, CIGARETTE SMOKING, BLOOD NICOTINE CONTENT/

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CIGARETTE NICOTINE CONTENT, SMOKING ABSTINENCE, NICOTINE METABOLISM HI, COTININE METABOLISM HI, SMOKING HABITS, GENETIC FACTORS, ENZYMES FACTORS, INDIVIDUAL VARIABILITY HI, METHODOLOGY VALIDITY HI, METHODOLOGY ANALYSIS, SMOKING HISTORY HI, NICOTINE ABSORPTION HI, METHODOLOGY CONCESSION, DATA VALIDITY CONCESSION, INTERPRETATION VALIDITY CONCESSION, CIGARETTE BRANDS, KENTUCKY STANDARD CIGARETTES, SMOKING INHALATION DEGREE, MATERNAL SMOKING, PLACENTA TRANSFER, URINARY COTININE CONTENT, TISSUE COTININE CONTENT/

RADIOIMMUNOASSAY, CANCER SMOKING CAUSATION 2, RESPIRATORY DISEASE SMOKING CAUSATION 2, CORONARY ARTERY DISEASE SMOKING CAUSATION 2, COTININE TOXICITY A, NICOTINE TOXICITY A, PIPE SMOKING, FETAL BLOOD, MATERNAL BLOOD/

ENGLISH LANGUAGE, WALTHAM MASS RESIDENCE, NEW YORK NY RESIDENCE, USA RESIDENCE, GRANTOR USPHS NATL CANCER INST, GRANTOR USPHS NATL INST ALLERGY INFECTIOUS DIS

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